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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/671,608

09/29/2003

Tetsuo Ono

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20457

7590

05/12/2005

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EXAMINER

VINH, LAN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,608

Applicant(s)

ONO ET AL.

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3 and 6-8 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/646,012.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 032903.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: The period "." after the word consisting appear to be a typographical error. Appropriate correction is required.

Claims 2, 4 are objected to because of the following informalities: The term "a containing oxygen atom" appear to be a typographical error, the examiner suggests replacing "a containing oxygen atom" with --a gas containing oxygen atom-- .

Appropriate correction is required.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,660,647 in view of Mikagi (US 6,274,932)

Claim 1 of the instant claimed invention meets all the limitations of claim 1 of US 6,660,647 except the usage of a mixture of halogen gas and adhesive gas inside the vacuum chamber. Mikagi discloses a process for manufacturing a semiconductor device comprises the step of using a mixture of halogen gas and nitrogen/adhesive gas inside the vacuum chamber (col 8, lines 57-60). Thus, one skilled in the art at the time the invention was made would have found it obvious to modify claim 1 of the instant claimed invention by using a mixture of halogen gas and nitrogen/adhesive gas to remove the unnecessary portions of the substrate to yield the patterned interconnection as taught by Mikagi (col 10, lines 51-57)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al (US 5,928, 528) in view of Mihara (US 6,020,111)

Kubota discloses a plasma treatment method of a sample having a layer of polysilicon and oxide film deposited on a substrate (col 6, lines 66-67). The method comprising steps of:

installing the sample A on a specimen stage/sample board 5 in a vacuum container (col 5, lines 44-45)

Art Unit: 1765

generating a plasma of a gas containing chlorine/ halogen atom inside said vacuum container (col 5, lines 64-65)

applying a radio frequency bias voltage having a frequency of 13.56 MHz on the specimen stage/sample board (col 2, lines 58-60; col 8, lines 65-67)

controlling a periodic on-off of the radio frequency bias voltage with an on-off control frequency of 10kHz. (col 6, lines 4-7; fig. 7)

Unlike the instant claimed inventions as per claims 1, 6-8, Kubota fails to disclose a sample having a metal of high melting point (W) or a multilayer film comprises tungsten, TiN and polysilicon

Mihara discloses a method for manufacturing semiconductor device comprises the step of forming a multilayer films comprises tungsten, TiN and polysilicon and a masking layer of SiON (contains no carbon) on a substrate/sample (col 3, lines 25-30)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Kubota method by forming a multilayer films on the substrate/sample as per Mihara because according to Mihara, a lamination/multilayer pattern of a silicon film and a metal film capable of reducing damages of an underlying surface layer during patterning (col 1, lines 48-52)

5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al (US 5,928, 528) in view of Mihara (US 6,020,111) and further in view of Yokoyama (US 5,515,984)

Art Unit: 1765

Kubota as modified by Mihara has been described above. Unlike the instant claimed inventions as per claims 2-3, Kubota and Mihara fails to specifically disclose using a mixed gas consisting of a gas containing chlorine atom and a gas containing oxygen

Yokoya discloses a method for etching metal film comprises the step of using a mixed gas consisting of chlorine and oxygen while maintaining the substrate temperature at 100° C (col 4, lines 4, lines 40-47)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Kubota and Mihara method by using a mixed gas consisting of chlorine and oxygen as per Yokoya because Yokoya discloses that a mixed gas containing oxygen and chlorine is preferably used as the etching gas and when oxygen is contained in the etching gas, two advantages are obtained (col 4, lines 57-59)

Allowable Subject Matter

6. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 4, the cited prior art of record fails to disclose a surface treatment method comprises the step of using a mixed gas consisting of at least a gas containing fluorine atom and a gas containing oxygen atom, in combination with the rest of the limitations of claim 4

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
May 10, 2005